SpeedStar: A Stellar Gyroscope, Phase I

Completed Technology Project (2006 - 2006)

Project Introduction

NASA science and exploration missions will continue to require observation and sensing platforms with enhanced guidance, navigation and control (GN&C) subsystems. In fact, GN&C technology improvements have the potential to enable new and revolutionary missions that will accelerate the exploration and scientific understanding of the solar system. Since, attitude determination and inertial rate measurement systems are a significant fraction of the spacecraft or platform resources there are opportunities to exploit recent technology advances in imaging and computing to produce an inertial measurement system (IMS) that has lower mass and power. A novel approach for high speed estimation of spacecraft attitude and rates from celestial observations has been conceived that could revolutionize the performance of platforms in many challenging environments including highly elliptical Earth orbits, libration point orbits, and lunar and planetary orbits.

Primary U.S. Work Locations and Key Partners
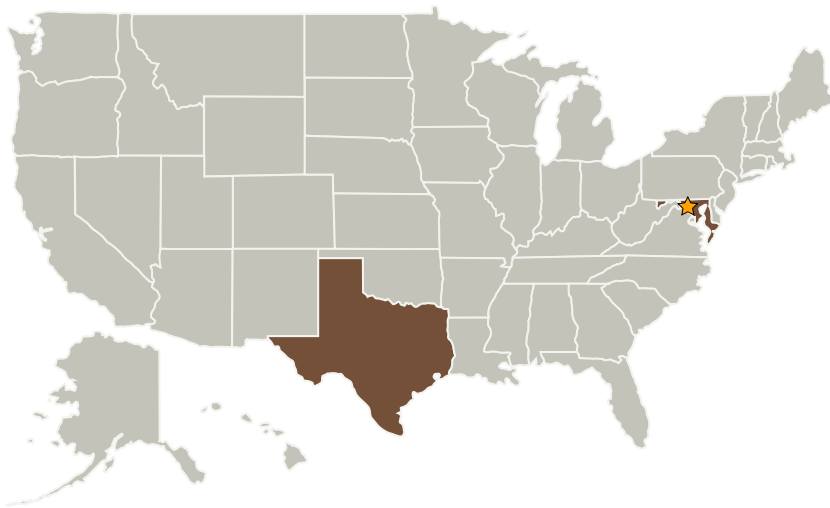
Organizations Performing Work	Role	Type	Location
⭐Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
StarVision Technologies, Inc.	Supporting Organization	Industry	College Station, Texas

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Primary U.S. Work Locations	
Maryland	Texas

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX17 Guidance, Navigation, and Control (GN&C)
  └ TX17.4 Attitude Estimation Technologies
    └ TX17.4.3 Attitude Estimation Sensors